

# The Paryphantidae of New Zealand.

## Descriptions of Further New Species.

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(Plate 28.)

In the first issue of these "Records" the writer published a review of the New Zealand members of the *Paryphantidae*, a family of large carnivorous land snails. In that paper it was shown that the localisation of the rather numerous species and subspecies was directly due to isolation, brought about by past and present topographic features. It was pointed out that many of these snails restrict themselves to high altitudes, and, in consequence, colonies on one mountain system are often effectively isolated from those inhabiting other systems, and so divergence takes place.

Since the publication of the first paper, two more new species of *Paryphanta* have been discovered, and these considerably extend the known range of the genus. One, from East Dome, Southland, extends the southern range by over two hundred miles, while the finding, on the Ruahine Range, in the North Island, of a new species of the *hochstetteri* series is also of considerable importance. The allied genus, *Rhytida*, has had one addition, with the discovery of a new species on the Poor Knights Islands.

Descriptions of these new species of *Paryphanta* and *Rhytida* are given herein, together with some further locality records of previously described species.

### ACKNOWLEDGMENTS.

The writer is deeply indebted to Professor W. B. Benham for granting permission to describe the Southland species, to Messrs. E. A. Marchant, James Grant and W. R. B. Oliver, in connection with the Ruahine species, and to Mr. A. T. Pycroft for the Poor Knights Island *Rhytida*. For carrying out valuable field investigations on the Whakamarama Range, West Nelson, the writer's thanks are due to Mr. E. B. Langford, of Bainham, and for specimens and important locality records to Messrs. R. E. Clouston and L. J. Dumbleton.

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### *Rhytida duplicata* Suter.

1904. *Rhytida duplicata* Suter. Proc. Malac. Soc. vol. 6, p. 155, figs. 1-3.

Although the bleached shells of this species are common along the Far Northern Coast, in most of the subrecent consolidated dunes, it was not until recently that living specimens were

found. Apparently *duplicata* is peculiar to the "Far Northern Block," for it has not been found south of Parengarenga Harbour, either living or subrecent.

Living specimens of this species were collected by the writer last February, on a forested ridge near Unuwahao (1063'), which is situated between Spirits Bay and Tom Bowling Bay. Other living specimens were found at the same time, by Mr. R. A. Falla; these came from further east, in a precipitous ravine near North Cape.

The colour of the fresh shells is a uniform ochreous-brown, and they were found living on the ground under masses of decaying leaves.

*Dentition*: (Text. Fig. 4). Formula, 15 + 1 + 15. Outermost lateral tooth small and rudimentary, next three increasing rapidly, followed by the fifth tooth, which is the largest and most massive, after which the remaining teeth gradually diminish in size towards the middle. Central tooth about two-thirds the size of the adjacent laterals.

***Rhytida pycrofti* n. sp.** Pl. 28, fig. 7, and text figs. 1 and 2.

This species occurs at the Poor Knights Islands, off the eastern coast of the North Auckland Peninsula, and it belongs to the *dunniæ* series, which includes also the species *tarangaensis* Powell 1930, Hen Island; *duplicata* Suter 1904, northernmost New Zealand; and *dunniæ* (Gray, 1840), from Kaitaia, North Auckland to Thames.

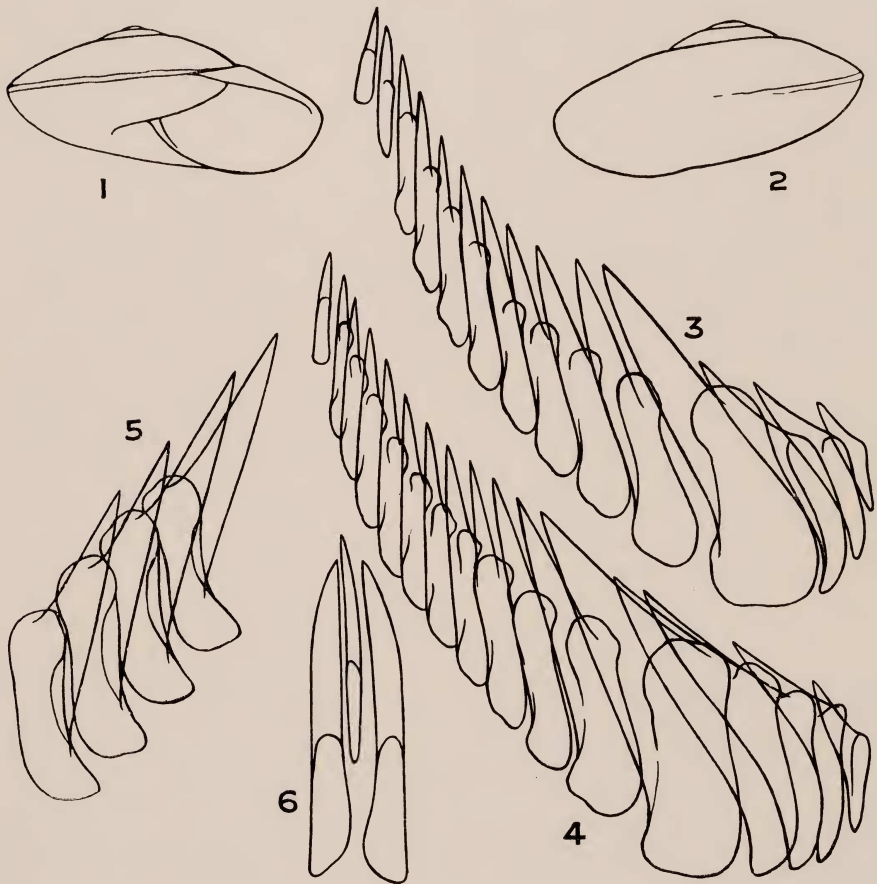
The Hen Island species, *tarangaensis*, and the new species, *pycrofti*, are very good examples of new forms which have originated through long isolation from the mainland stock.

The same may be said of the Far Northern *duplicata*, which is just as characteristic of the block to the north of the sandy waste stretching from near Parengarenga to Awanui, as *dunniæ* is to the lower portion of the Peninsula, from Kaitaia, southward. In this latter instance, although the respective areas occupied by *duplicata* and *dunniæ* are connected as dry land, isolation obtains owing to the sterility of the connecting country, which is not forested and is for the most part a waste of drifting sand. These conditions must have existed for a considerable time, for *duplicata* is a common fossil, and the only *Rhytida* present in the Far Northern consolidated dunes, and, similarly, at Doubtless Bay, *dunniæ* is the only *Rhytida* found there in the sub-recent dunes. In both areas "moa" remains are found associated with the fossil snails.

*Description of new species*:—

Shell superficially very similar to that of *dunniæ*, except that the peripheral keel almost fades out on the last half of the body-whorl. The most striking difference, however, is in the

dorsal sculpture of the two species. That of *dunniac* (Pl. 28, fig. 6) consists of radiate obliquely-retractive wrinkles, which are so broken and irregular that they give a malleated appearance to the surface, whereas in *pycrofti* (Pl. 28, fig. 7) the radials are mostly entire and evenly arcuate, with only a slight tendency to anastomose. Size, number of whorls, colour, and other shell features, unless otherwise stated above, are identical in the two species. The sculpture in *pycrofti* is nearest to that of the Hen Island, *tarangaensis*, but that species differs considerably in shape, height of spire, size of the umbilicus, and in the dentition.



Figs. 1 and 2. *Rhytida pycrofti* n. sp. (holotype).  $\times 1\frac{1}{2}$ .

Fig. 3. *Rhytida pycrofti* n. sp. Dentition.  $\times 100$ .

Fig. 4. *Rhytida duplicata* Suter. Dentition (Unuwahao specimen).  $\times 100$ .

Fig. 5. *Paryphanta marchanti* n. sp. Dentition, laterals.  $\times 100$ .

Fig. 6. *Paryphanta marchanti* n. sp. Dentition, central and adjacent laterals.  $\times 100$ .

*Dentition:* (Text fig. 3.) Formula,  $13 + 1 + 13$ . Outermost lateral tooth small, rudimentary, next two increasing in size, followed by the fourth, which is the largest and most massive, after which the teeth gradually diminish towards the middle. Central tooth very little smaller than adjacent laterals.

*Dimensions of shell:—*

Major Diameter.	Minimum Diameter.	Height.	
24.5 mm.	20 mm.	12 mm.	(holotype)
25.0 mm.	20.5 mm.	12.25 mm.	(paratype)
24.75 mm.	20.4 mm.	13 mm.	(paratype)
25.0 mm.	20 mm.	12 mm.	( <i>dunmia</i> e, Whangarei)
24.5 mm.	20 mm.	12 mm.	( <i>dunmia</i> e, Whangarei)
31.0 mm.	24.5 mm.	19.5 mm.	( <i>tarangaensis</i> )

*Holotype* in Auckland Museum.

*Habitat*: Poor Knights Islands, N.Z. Collected by Mr. A. T. Pycroft, 1932.

Genus PARYPHANTA Albers 1850.

Type: *Nanina busbyi* Gray.

***Paryphanta marchanti* n. sp. Pl. 28, figs. 1 and 2.**

Shell of about the same size as *hochstetteri bicolor*, to which it is nearest allied, but differing from that species in having the base entirely without colour bands or zones, and in the parietal callus being pale grey. In *hochstetteri*, *hochstetteri obscura*, *hochstetteri bicolor* and in *traversi* the parietal callus is dark purplish-brown. Whorls  $5\frac{1}{4}$ , rather slowly increasing. Dorsal surface to periphery finely striated, ventral surface smooth and polished. Protoconch of two moderately broad flattened whorls, which are irregularly sculptured with faint axial folds and a few microscopic spiral striations. On the first post-nuclear whorl, spiral striae separate the dorsal sculpture into six spiral series of roughly chevron-shaped axial striations. On the remaining whorls this dorsal sculpture becomes a mass of irregularly anastomosing striations. Umbilicus about one seventh major diameter of base. Colour of shell yellowish-brown; protoconch pale yellowish, parietal callus pale grey, interior of aperture dark grey. Dorsal surface of shell faintly spirally banded and lined with darker brown. The holotype has two narrow bands at the periphery, four lines immediately below it and about six faint lines between the peripheral bands and the upper suture. The paratypes are variously marked, but all have a few distinct colour bands at the periphery and indistinct colour lines above. Ventral surface of shell uniformly yellowish-brown, except for a slightly darker gradation of colour towards and within the umbilicus.

The shell proportions are as in typical *hochstetteri*, i.e., "Type A" (Powell, 1930, p. 34.). The only other *Paryphanta*, allied to the *hochstetteri* series, at present known from the North Island, is *traversi*. This species is found in the low country around Levin, but it has the shell proportions of "Type B," so, obviously, it has no close relationship with *marchanti*.

Major diameter, 52 mm.; minimum diameter, 43 mm.; height, 28 mm. (holotype).



*Holotype* presented to Auckland Museum by Mr. E. A. Marchant, of Wanganui. Paratypes in Wanganui and Dominion Museums.

*Habitat*: Mokai-Patea trig station, 3,600 ft., near junction of Mangatera Stream with Rangitikei River, Ruahine Range, North Island. Collected by Mr. E. A. Marchant, February, 1932.

*Dentition*: (Text figs. 5 and 6.) Formula,  $57 + 1 + 57$ . Central tooth considerably smaller and more slender than innermost laterals. Lateral teeth very similar to those of *hochstetteri*. The specimen from which the radula was extracted was only about half grown, hence the formula of an adult specimen may be found to have slightly more teeth.

The finding of a *Paryphanta* of the *hochstetteri* type, on the Ruahine Range, comes as a surprise, particularly as species of that genus appear to be absent from the Tararua and Rimutaka mountain systems. As mentioned above, *P. hochstetteri bicolor* is the nearest relative to the Ruahine species, and it is restricted to the mountainous country of the Eastern Marlborough Sounds.

The species is named after the late Mr. J. W. A. Marchant, father of Mr. E. A. Marchant.

***Paryphanta spedeni* n. sp.** Pl. 28, figs. 3, 4, 5.

Shell sub-globose, moderately large, narrowly umbilicate; smooth and polished below periphery and faintly striated above. Colour mostly dark greenish-brown, irregularly axially streaked with darker greenish-brown bands, which are co-incident with the rest periods in the shell. The protoconch is pale yellowish, and the dorsal surface of the body-whorl has a slightly reddish-brown tone, predominant over the normal greenish-brown of the rest of the shell. Shell substance thin, composed almost entirely of conchin. Whorls rapidly increasing,  $4\frac{1}{2}$ , including protoconch of  $1\frac{1}{2}$  flattened, almost smooth whorls. At a magnification of X 12, the protoconch is seen to be sculptured with exceedingly fine axial striations, which are crossed by irregular and equally fine spiral striations. On the succeeding whorl and a-half, the sculpture consists of definite closely spaced axial striations, which are broken up by smooth spiral interspaces, into about ten narrow spiral series.

On the remaining whorls the axials link up in a complex pattern of chevron-shaped striations. This dorsal sculpture terminates at about the periphery, the lower surface being smooth and polished. Spire slightly raised, rounded, about one third height of aperture. Umbilicus small, deep, about one-eleventh major diameter of base. Peristome discontinuous, thin, advanced above and overhanging the basal portion. Parietal wall with a very thin veneer of callus, bearing scattered, exceedingly fine granules, which are not nearly so prominent as those in *gilliesi*.

Major diameter (estimated), 36 mm.; minimum diameter, 30 mm.; height, 25 mm. (holotype).

*Holotype*: Presented to Auckland Museum by Professor W. B. Benham.

*Habitat*: On East Dome, at 3,000 ft., Garvie Mountains, between Wakaia and Kingston, Southland. Collected by Mr. J. Speden.

In coloration and size this species most closely resembles *P. rossiana* Powell, from Mt. Greenland, Ross, but on shell features, particularly in the shape and the striated dorsal surface, it stands nearest to the West Coast *unicolorata* Powell. The darker coloration, the axial banding, and the more globular shape serve to separate *spedeni* from *unicolorata*.

The finding of this interesting species increases the southern range of the genus by over two hundred miles.

***Paryphanta hochstetteri* (Pfeiffer).**

1862. *Helix hochstetteri* Pfeiffer, *Mal. Bl.*, p. 146.

1930. *Paryphanta hochstetteri* (Pfeiffer), Powell, *Rec. Auck. Inst. Mus.*, vol. I., No. 1, p. 37 (for full synonymy).

The following specimens from localities on the Haupiri Range are no different from the typical species of the adjoining Pikikiruna system:—

(1) Between Snows River and Anatoki River, Haupiri Range, Nelson. Collected by Mr. E. B. Langford.

(2) Headwaters of Anatoki River, Nelson. Collected by Mr. R. E. Clouston.

***Paryphanta superba* Powell.**

1930. *Paryphanta superba* Powell. *Rec. Auck. Inst. Mus.*, vol. I., No. 1, p. 41.

The known range of this species is extended by the following new locality records.

(1) Between Mt. Higgins, 2,972 ft., and Mt. Stevens, 3,800 ft., Whakamarama Range, West Nelson. Collected by Mr. E. B. Langford, 28/3/1932.

(2) On "Karamea Track," at headwaters of Tony Creek, Goulund Downs, at about 2,000 ft. Collected by Mr. L. J. Dumbleton, 26/12/1930.

(3) On "Karamea Track," Weka Creek, Goulund Downs, at about 2,000 ft. Collected by Mr. L. J. Dumbleton, 26/12/1930.

The finding of this species on the Goulund Downs end of the Whakamarama Range is interesting, but not surprising, as one end of this System joins up with the high country of the Downs.

***Paryphanta hochstetteri bicolor* Powell.**

1930. *Paryphanta hochstetteri bicolor* Powell, *Rec. Auck. Inst. Mus.*, vol. 1, No. 1, p. 40.

Further field work during August of this year has furnished additional particulars concerning the distribution of the subspecies *bicolor*. A remarkable fact is that on one small island, Blumine Island (also known as Pig Island and Oruawairau Island), *bicolor*, hitherto not observed living from below 2,000 feet, was found right down to sea level. Blumine Island, which is

situated in Queen Charlotte Sound, has a maximum elevation of only 1,023 feet, but it is well watered and the south-eastern portion is covered with a dense coastal vegetation, the dominant plants of which are *mahoe*, *Melicytus ramiflorus*, *kohekohe*, *Dysoxylum spectabile*, sedge, *Uncinia australis*, supple-jack, *Rhipogonum scandens*, *ponga*, *Cyathea dealbata*, *nikau*, *Rhopalostylis sapida*, and the ferns *Asplenium bulbiferum* and *Blechnum filiforme*.\*

The Paryphantas were so abundant on this island that the dead shells were to be found everywhere on the ground, and little searching was necessary to locate the live ones, which occurred in great numbers under dead leaves and around the roots of ferns. Even the high-tidal drift-line was strewn with the empty shells washed down by small streams and storm water.

The neighbouring island, Arapawa, has an elevation up to 2,190 feet and there these snails are found also, but local residents report that there are none below 2,000 feet.

Evidently Blumine Island has become detached from Arapawa during a comparatively recent subsidence, and apparently the snails in this case have been required to alter their normal habits owing to lack of the required elevation.

The fact that the island is well watered and also that the coastal forest does not get so dry as in the case of the beech areas has made it a simple matter for these snails to adapt themselves to the new conditions that have been forced upon them.

Mr. D. Perano, of Picton, who informed the writer of the Blumine Island snails, has not seen them living below 2,000 feet at any other locality, nor had the other residents of the district.

Dead shells of *bicolor* were found at a low elevation near Para, on the eastern side of the Tuamarina Valley, Marlborough, but these proved to have been washed down by storm water from higher country at the back.

### **Paryphanta gilliesi** E. A. Smith.

1880. *Paryphanta gilliesi* Smith. Ann. Mag. Nat. Hist., ser. 5, vol. 6, p. 159.

1930. *Paryphanta gilliesi* Smith. Powell, Rec. Auck. Inst. Mus., vol. I., No. 1, p. 44.

Two further locality records of typical *gilliesi* are given below. These indicate that the species is distributed along the entire length of the Whakamarama Range and also over at least part of the Gouland Downs.

As the Gouland Downs are at a moderate elevation, 2,000 to 3,000 feet, they afford intercommunication for several species which have spread from neighbouring mountain systems converging at about this locality.

(1) On saddle between Saxon Creek and headwaters of Bluffy Creek, Gouland Downs, West Nelson. Collected by Mr. L. J. Dumbleton, 25/12/1930.

\*Identified by Miss L. M. Cranwell, M.A., Botanist.

(2) Mt. Stevens, Whakamarama Range, at about 3,800 ft., around roots of "tussock." Collected by Mr. E. B. Langford, 28/3/1932.

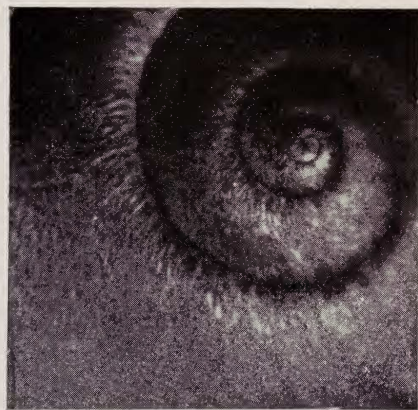
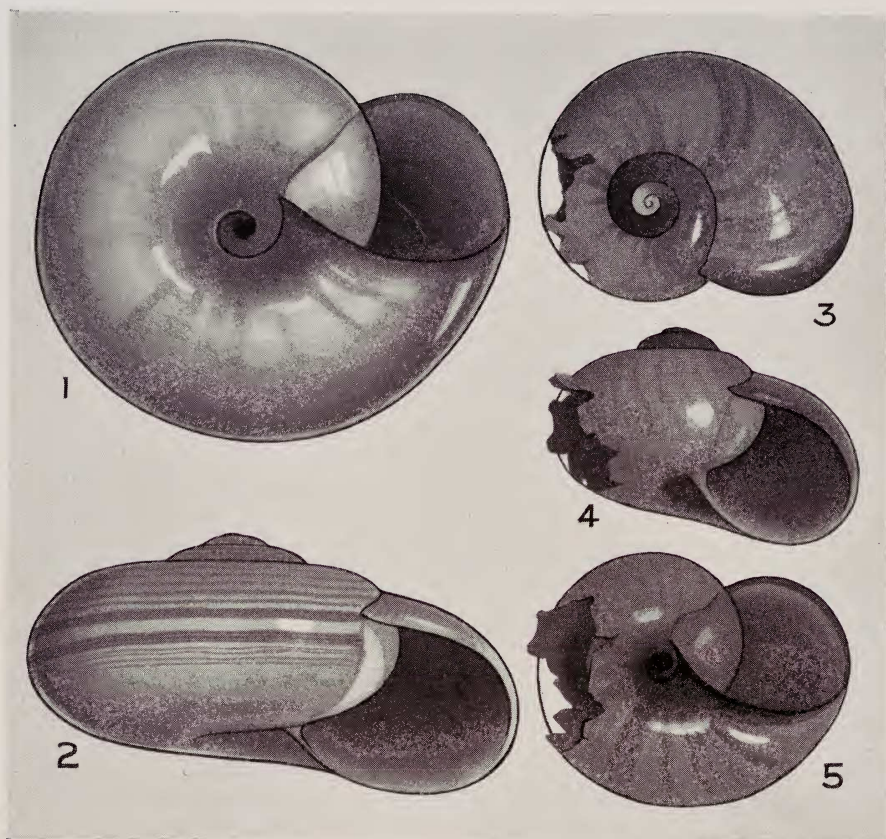
***Paryphanta gilliesi* (variety A).**

1930. *Paryphanta gilliesi* (variety A) Powell, Rec. Auck. Inst. Mus., vol. I., No. 1, p. 46.

At the time this form was described and figured there was some doubt concerning a lot of shells that were stated to have been collected on the Whakamarama Range, West of Bainham. The donor of the West of Bainham specimens, Mr. F. V. Knapp, did not collect the shells himself, and he is unable now to find out if the locality, as originally stated, was correct for all the specimens, but thinks that most likely they were gathered from several localities in the district.

Mr. E. B. Langford, of Bainham, kindly undertook to search the Whakamarama Range, west of his township, and at an altitude of 3,800 ft., on Mt. Stevens, he found a living specimen and some dead shells of *P. gilliesi*, typical, but no specimens of the "variety A."





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Figs. 1 and 2. *Paryphanta marchanti* n. sp. (holotype).

Figs. 3, 4, 5. *Paryphanta spedeni* n. sp. (holotype).

Fig. 6. *Rhytida dunniac* (Gray) Whangarei. Photomicrograph of sculpture.

Fig. 7. *Rhytida pycrofti* n. sp. Photomicrograph of sculpture.